CLAIMS

What is claimed is:

1. A method for assessing remanufacturability of one or more items in an apparatus, the method comprising:

determining an overall condition of each of the items based on obtained data;

determining whether each of the items satisfies one or more operation specifications based on the obtained data;

determining a risk priority of each of the items based on the obtained data; and

assessing a plurality of remanufacturing options for each of the items based on the determined overall condition, the determined satisfaction of the operation specifications, and the determined risk priority for each of the items to identify which of the plurality of remanufacturing options are viable.

2. The method as set forth in claim 1 further comprising collecting the obtained data on each of the items.

3. The method as set forth in claim 2 wherein the obtaining data further comprises at least one of:

obtaining at least a portion of the data from stored information on each of the items;

researching each of the items to obtain at least a portion of the data; and

examining each of the items to obtain at least a portion of the data.

4. The method as set forth in claim 2 further comprising determining what types of the obtained data need to be collected.

5. The method as set forth in claim 1 further comprising:

identifying one or more systems in the apparatus;

identifying components in each of the systems;

determining a functional hierarchy and interrelation of the systems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems and components.

6. The method as set forth in claim 5 further comprising identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems, subsystems, and components

7. The method as set forth in claim 1 wherein determining an overall condition of each of the items further comprises assessing one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions for the item.

8. The method as set forth in claim 1 wherein the determining whether each of the items satisfies one or more operation specifications further comprises:

determining one or more component functions associated with each component; and

determining one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

9. The method as set forth in claim 8 further comprising:

identifying one or more systems in the apparatus, each of the systems comprising one or more of the components; and

identifying one or more system functions for each of the systems, wherein the operations specifications also comprise the component system functions.

10. The method as set forth in claim 8 wherein determining one or more manufacturing standards for each of the components further comprises at least one of:

obtaining at least a portion of the manufacturing standards from stored information on each of the components; and

researching each of the components to obtain at least a portion of the manufacturing standards.

11. The method as set forth in claim 1 wherein the determining a risk priority of each of the items further comprises:

determining one or more failure modes for each of the items;

determining one or more causes for each of the failure modes;

determining one or more effects of each of the failure modes;

determining a severity rating for each of the effects; and

determining an occurrence rating for each of the effects, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes.

12. The method as set forth in claim 11 wherein the effects comprise at least one of a local effect, a secondary effect, and an ultimate effect.

13. The method as set forth in claim 1 wherein the remanufacturing options further comprise at least two or more of a modify option, a restore option, a reuse option, a replace option, and a remove option.

14. The method as set forth in claim 1 wherein the assessing a plurality of remanufacturing options further comprises identifying which one of the plurality of remanufacturing options identified as viable is an optimal choice.

15. The method as set forth in claim 1 further comprising obtaining cost data on each of the remanufacturing options for each of the items.

16. The method as set forth in claim 15 further comprising reassessing the plurality of remanufacturing options for each of the items based on the assessing of the plurality of remanufacturing options and the obtained cost data.

17. The method as set forth in claim 1 further comprising analyzing a value of each of the viable remanufacturing options based on two or more factors.

18. The method as set forth in claim 17 wherein at least one of the factors is a cost for each of the remanufacturing options.

19. The method as set forth in claim 17 wherein the analyzing further comprises:

determining a weight for each of a plurality of measurement criteria;

rating each of the remanufacturing options for each of the plurality of measurement criteria; and

determining a total score for each of the remanufacturing options based on the weight and the scoring, wherein an optimal one of the remanufacturing options has the highest score.

20. The method as set forth in claim 1 further comprising analyzing an economic cost for at least one of the viable remanufacturing options.

21. A system for assessing remanufacturability of one or more items in an apparatus, the system comprising:

an overall condition processing system that determines an overall condition of each of the items based on obtained data;

an operation specification processing system that determines whether each of the items satisfies one or more operation specifications based on the obtained data;

a risk priority processing system that determines a risk priority of each of the items based on the obtained data; and

a remanufacturing assessment processing system that assesses a plurality of remanufacturing options for each of the items based on the determined overall condition, the determined satisfaction of the operation specifications, and the determined risk priority for each of the items to identify which of the plurality of remanufacturing options are viable.

22. The system as set forth in claim 21 further comprising a collection system that collects the obtained data on each of the items.

23. The system as set forth in claim 22 further comprising a data determination system that determines what types of the obtained data need to be obtained.

24. The system as set forth in claim 1 further comprising:

a first identification system that identifies one or more systems in the apparatus and the components in each of the systems;

a functional analysis system that determines a functional hierarchy and interrelation of the systems and components, wherein the remanufacturing assessment processing system assesses a viability of a plurality of remanufacturing options for each of the items also based on the functional hierarchy and interrelation of the systems and components.

25. The system as set forth in claim 21 further comprising a subsystem identification system that identifies one or more subsystems, wherein the functional analysis system determines a functional hierarchy and interrelation of the systems, subsystems and components, wherein the remanufacturing assessment processing system assesses a viability of a plurality of remanufacturing options for each of the items also based on the functional hierarchy and interrelation of the systems, subsystems, and components

26. The system as set forth in claim 21 wherein the overall condition processing system further comprises a physical condition processing system that assesses one or more physical conditions for each of the items, wherein the overall

condition processing system assesses the overall condition of each of the items based on the assessed physical conditions for the item.

27. The system as set forth in claim 21 wherein the operation specification processing system further comprises:

a component function system that determines one or more component functions associated with each component; and

a manufacturing standards system that determines one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

28. The system as set forth in claim 27 further comprising a system function identification system that identifies one or more systems in the apparatus and identifies one or more system functions for each of the systems, wherein the operations specifications also comprise the component system functions.

29. The system as set forth in claim 1 wherein the risk priority processing system further comprises:

a failure mode system that determines one or more failure modes for each of the items;

a cause determining system that determines one or more causes for each of the failure modes;

an effects determining system that determines one or more effects of each of the failure modes;

a severity rating system that determines a severity rating for each of the effects; and

an occurrence rating system that determines an occurrence rating for each of the effects, wherein the risk priority processing system derives the risk priority from the severity rating and the occurrence rating for each of the causes.

30. The system as set forth in claim 29 wherein the effects comprise at least one of a local effect, a secondary effect, and an ultimate effect.

31. The system as set forth in claim 21 wherein the remanufacturing options further comprise at least two or more of a modify option, a restore option, a reuse option, a replace option, and a remove option.

32. The system as set forth in claim 21 wherein the remanufacturing assessment processing system identifies which one of the plurality of remanufacturing options identified as viable is an optimal choice.

33. The system as set forth in claim 21 further comprising a cost data processing system that obtains cost data on each of the remanufacturing options for each of the items.

34. The system as set forth in claim 33 further comprising a remanufacturing reassessment processing system that reassesses the plurality of remanufacturing options for each of the items based on the assessing of the plurality of remanufacturing options and the obtained cost data.

35. The system as set forth in claim 21 further comprising a value analysis processing system that analyzes a value of each of the viable remanufacturing options based on two or more factors.

36. The system as set forth in claim 35 wherein at least one of the factors is a cost for each of the remanufacturing options.

37. The system as set forth in claim 35 wherein the value analysis processing system further comprises:

a weight determination system that determines a weight for each of a plurality of measurement criteria;

a rating system that rates each of the remanufacturing options for each of the plurality of measurement criteria; and

a scoring system that determines a total score for each of the remanufacturing options based on the weight and the scoring, wherein an optimal one of the remanufacturing options has the highest total score.

38. The system as set forth in claim 21 further comprising an economic analysis system that analyzes an economic cost for at least one of the viable remanufacturing options.

39. A computer readable medium having stored thereon instructions for assessing remanufacturability of one or more items in an apparatus which when executed by at least one processor, causes the processor to perform steps comprising:

determining an overall condition of each of the items based on obtained data;

determining whether each of the items satisfies one or more operation specifications based on the obtained data;

determining a risk priority of each of the items based on the obtained data; and

assessing a plurality of remanufacturing options for each of the items based on the determined overall condition, the determined satisfaction of the operation specifications, and the determined risk priority for each of the items to identify which of the plurality of remanufacturing options are viable.

40. The medium as set forth in claim 39 further comprising collecting the obtained data on each of the items.

41. The medium as set forth in claim 40 wherein the obtaining data further comprises at least one of:

obtaining at least a portion of the data from stored information on each of the items;

researching each of the items to obtain at least a portion of the data; and

examining each of the items to obtain at least a portion of the data.

42. The medium as set forth in claim 40 further comprising determining what types of the obtained data need to be collected.

43. The medium as set forth in claim 39 further comprising:

identifying one or more systems in the apparatus;

identifying components in each of the systems;

determining a functional hierarchy and interrelation of the systems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems and components.

44. The medium as set forth in claim 43 further comprising identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems, subsystems, and components

45. The medium as set forth in claim 39 wherein determining an overall condition of each of the items further comprises assessing one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions for the item.

46. The medium as set forth in claim 39 wherein the determining whether each of the items satisfies one or more operation specifications further comprises:

determining one or more component functions associated with each component; and

determining one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

47. The medium as set forth in claim 46 further comprising:

identifying one or more systems in the apparatus, each of the systems comprising one or more of the components; and

identifying one or more system functions for each of the systems, wherein the operations specifications also comprise the component system functions.

48. The medium as set forth in claim 46 wherein determining one or more manufacturing standards for each of the components further comprises at least one of:

obtaining at least a portion of the manufacturing standards from stored information on each of the components; and

researching each of the components to obtain at least a portion of the manufacturing standards.

49. The medium as set forth in claim 39 wherein the determining a risk priority of each of the items further comprises:

determining one or more failure modes for each of the items;

determining one or more causes for each of the failure modes;

determining one or more effects of each of the failure modes;

determining a severity rating for each of the effects; and

determining an occurrence rating for each of the effects, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes.

50. The medium as set forth in claim 49 wherein the effects comprise at least one of a local effect, a secondary effect, and an ultimate effect.

51. The medium as set forth in claim 39 wherein the remanufacturing options further comprise at least two or more of a modify option, a restore option, a reuse option, a replace option, and a remove option.

52. The medium as set forth in claim 39 wherein the assessing a plurality of remanufacturing options further comprises identifying which one of the plurality of remanufacturing options identified as viable is an optimal choice.

53. The medium as set forth in claim 39 further comprising obtaining cost data on each of the remanufacturing options for each of the items.

54. The medium as set forth in claim 53 further comprising reassessing the plurality of remanufacturing options for each of the items based on the assessing of the plurality of remanufacturing options and the obtained cost data.

55. The medium as set forth in claim 39 further comprising analyzing a value of each of the viable remanufacturing options based on two or more factors.

56. The medium as set forth in claim 55 wherein at least one of the factors is a cost for each of the remanufacturing options.

57. The medium as set forth in claim 56 wherein the analyzing further comprises:

determining a weight for each of a plurality of measurement criteria;

rating each of the remanufacturing options for each of the plurality of measurement criteria; and

determining a total score for each of the remanufacturing options based on the weight and the scoring, wherein an optimal one of the remanufacturing options has the highest score.

58. The medium as set forth in claim 39 further comprising analyzing an economic cost for at least one of the viable remanufacturing options.

59. A method for assessing remanufacturability of one or more items in an apparatus, the method comprising:

obtaining one or more assessments of the one or more items; and

assessing a plurality of remanufacturing options for each of the items based on the one or more assessments to identify which of the plurality of remanufacturing options are viable.

60. The method as set forth in claim 59 wherein the obtaining one or more assessments comprises determining an overall condition of each of the items based on obtained data.

61. The method as set forth in claim 60 wherein determining an overall condition of each of the items further comprises obtaining assessments of one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions for the item.

62. The method as set forth in claim 59 wherein the obtaining one or more assessments comprises determining whether each of the items satisfies one or more operation specifications based on the obtained data.

63. The method as set forth in claim 62 wherein the determining whether each of the items satisfies one or more operation specifications further comprises:

determining one or more component functions associated with each component; and

determining one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

64. The method as set forth in claim 63 further comprising:

identifying one or more systems in the apparatus, each of the systems comprising one or more of the components; and

identifying one or more system functions for each of the systems, wherein the operations specifications also comprise the component system functions.

65. The method as set forth in claim 59 wherein the obtaining one or more assessments comprises determining a risk priority of each of the items based on the obtained data.

66. The method as set forth in claim 65 wherein the determining a risk priority of each of the items further comprises:

determining one or more failure modes for each of the items;

determining one or more causes for each of the failure modes;

determining one or more effects of each of the failure modes;

determining a severity rating for each of the effects; and

determining an occurrence rating for each of the effects, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes.

67. The method as set forth in claim 66 wherein the effects comprise at least one of a local effect, a secondary effect, and an ultimate effect.

68. The method as set forth in claim 59 further comprising:

identifying one or more systems in the apparatus;

identifying components in each of the systems;

determining a functional hierarchy and interrelation of the systems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems and components.

69. The method as set forth in claim 68 further comprising identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems, subsystems, and components

70. The method as set forth in claim 59 wherein the remanufacturing options further comprise at least two or more of a modify option, a restore option, a reuse option, a replace option, and a remove option.

71. The method as set forth in claim 59 wherein the assessing a plurality of remanufacturing options further comprises identifying which one of the plurality of remanufacturing options identified as viable is an optimal choice.

72. A system for assessing remanufacturability of one or more items in an apparatus, the system comprising:

an item assessment processing system that obtains one or more assessments of the one or more items; and

a remanufacturing assessment system that assesses a plurality of remanufacturing options for each of the items based on the obtained one or more assessments to identify which of the plurality of remanufacturing options are viable.

73. The system as set forth in claim 72 wherein the item assessment processing system determines an overall condition of each of the items based on obtained data.

74. The system as set forth in claim 73 wherein the item assessment processing system assesses one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions for the item.

75. The system as set forth in claim 72 wherein the item assessment processing system determines whether each of the items satisfies one or more operation specifications based on the obtained data.

76. The system as set forth in claim 75 wherein the item assessment processing system further comprises:

a component function processing system that determines one or more component functions associated with each component; and

a manufacturing standards processing system that determines one or more manufacturing standards for each of the components, wherein the

operations specifications comprise the component functions and the manufacturing standards.

77. The system as set forth in claim 72 further comprising an identification system that identifies one or more systems in the apparatus and one or more system functions for each of the systems, wherein the operations specifications also comprise the component system functions.

78. The system as set forth in claim 72 wherein the item assessment processing system determines a risk priority of each of the items based on the obtained data.

79. The system as set forth in claim 72 wherein the item assessment processing system further comprises:

a failure mode system that determines one or more failure modes for each of the items;

a cause determination system that determines one or more causes for each of the failure modes;

an effects determination system that determines one or more effects of each of the failure modes;

a severity rating system that determines a severity rating for each of the effects; and

an occurrence rating system that determines an occurrence rating for each of the effects, wherein the item assessment processing system derives the risk priority from the severity rating and the occurrence rating for each of the causes.

80. The system as set forth in claim 79 wherein the effects comprise at least one of a local effect, a secondary effect, and an ultimate effect.

81. The system as set forth in claim 72 further comprising:

an identification system that identifies one or more systems in the apparatus and components in each of the systems; and

a functional analysis system that determines a functional hierarchy and interrelation of the systems and components, wherein item assessment processing system assesses the viability of a plurality of remanufacturing options for each of the items also based on the functional hierarchy and interrelation of the systems and components.

82. The system as set forth in claim 81 wherein the identification system identifies one or more subsystems, wherein the functional analysis system determines a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the item assessment processing system assesses a viability of a plurality of remanufacturing options for each of the items also based on the functional hierarchy and interrelation of the systems, subsystems, and components

83. The system as set forth in claim 72 wherein the remanufacturing options further comprise at least two or more of a modify option, a restore option, a reuse option, a replace option, and a remove option.

84. The system as set forth in claim 72 wherein the item assessment processing system identifies which one of the plurality of remanufacturing options identified as viable is an optimal choice.

85. A computer readable medium having stored thereon instructions for assessing remanufacturability of one or more items in an apparatus which when executed by at least one processor, causes the processor to perform steps comprising:

obtaining one or more assessments of the one or more items; and

assessing a plurality of remanufacturing options for each of the items based on the one or more assessments to identify which of the plurality of remanufacturing options are viable.

86. The medium as set forth in claim 85 wherein the obtaining one or more assessments comprises determining an overall condition of each of the items based on obtained data.

87. The medium as set forth in claim 86 wherein determining an overall condition of each of the items further comprises obtaining assessments of one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions for the item.

88. The medium as set forth in claim 85 wherein the obtaining one or more assessments comprises determining whether each of the items satisfies one or more operation specifications based on the obtained data.

89. The medium as set forth in claim 88 wherein the determining whether each of the items satisfies one or more operation specifications further comprises:

determining one or more component functions associated with each component; and

determining one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

90. The medium as set forth in claim 88 further comprising:

identifying one or more systems in the apparatus, each of the systems comprising one or more of the components; and

identifying one or more system functions for each of the systems, wherein the operations specifications also comprise the component system functions.

91. The medium as set forth in claim 85 wherein the obtaining one or more assessments comprises determining a risk priority of each of the items based on the obtained data.

92. The medium as set forth in claim 91 wherein the determining a risk priority of each of the items further comprises:

determining one or more failure modes for each of the items;

determining one or more causes for each of the failure modes;

determining one or more effects of each of the failure modes;

determining a severity rating for each of the effects; and

determining an occurrence rating for each of the effects, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes.

93. The medium as set forth in claim 92 wherein the effects comprise at least one of a local effect, a secondary effect, and an ultimate effect.

94. The medium as set forth in claim 85 further comprising:

identifying one or more systems in the apparatus;

identifying components in each of the systems;

determining a functional hierarchy and interrelation of the systems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems and components.

95. The medium as set forth in claim 94 further comprising identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems, subsystems, and components

96. The medium as set forth in claim 85 wherein the remanufacturing options further comprise at least two or more of a modify option, a restore option, a reuse option, a replace option, and a remove option.

97. The medium as set forth in claim 85 wherein the assessing a plurality of remanufacturing options further comprises identifying which one of the plurality of remanufacturing options identified as viable is an optimal choice.

98. A method for analyzing a value of a plurality of remanufacturing options, the method comprising:

determining a weight for each of a plurality of measurement criteria;

determining a rating for each of the plurality of remanufacturing options for each of the plurality of measurement criteria;

determining a measurement criteria score for each of the plurality of remanufacturing options based on the determined weight and the determined rating; and

determining a total score for each of the remanufacturing options based on the determined measurement criteria scores for each of the plurality of remanufacturing options, wherein an optimal one of the remanufacturing options has the highest score.

99. The method as set forth in claim 98 wherein the determining a weight for each of a plurality of measurement criteria further comprises the use of a paired comparison method.

100. The method as set forth in claim 98 wherein the determining a measurement criteria score is a product of the determined weight and the determined rating for each of the plurality of measurement criteria for each of the plurality of remanufacturing options.

101. A system for analyzing a value of a plurality of remanufacturing options, the system comprising a determination processing system that determines a weight for each of a plurality of measurement criteria, a rating for each of the plurality of remanufacturing options for each of the plurality of measurement criteria, a measurement criteria score for each of the plurality of remanufacturing options based on the determined weight and the determined rating, and a total

score for each of the remanufacturing options based on the determined measurement criteria scores for each of the plurality of remanufacturing options, wherein an optimal one of the remanufacturing options has the highest score.

102. The system as set forth in claim 101 wherein the determination processing system uses of a paired comparison method to determine the weight for each of the plurality of measurement criteria.

103. The system as set forth in claim 101 wherein the determination processing system determines the measurement criteria score by taking a product of the determined weight and the determined rating for each of the plurality of measurement criteria for each of the plurality of remanufacturing options.

104. A computer readable medium having stored thereon instructions for analyzing a value of a plurality of remanufacturing options which when executed by at least one processor, causes the processor to perform steps comprising::

determining a weight for each of a plurality of measurement criteria;

determining a rating for each of the plurality of remanufacturing options for each of the plurality of measurement criteria;

determining a measurement criteria score for each of the plurality of remanufacturing options based on the determined weight and the determined rating; and

determining a total score for each of the remanufacturing options based on the determined measurement criteria scores for each of the plurality of remanufacturing options, wherein an optimal one of the remanufacturing options has the highest score.

105. The method as set forth in claim 104 wherein the determining a weight for each of a plurality of measurement criteria further comprises the use of a paired comparison method.

106. The method as set forth in claim 104 wherein the determining a measurement criteria score is a product of the determined weight and the determined rating for each of the plurality of measurement criteria for each of the plurality of remanufacturing options.